

FIG. 1A

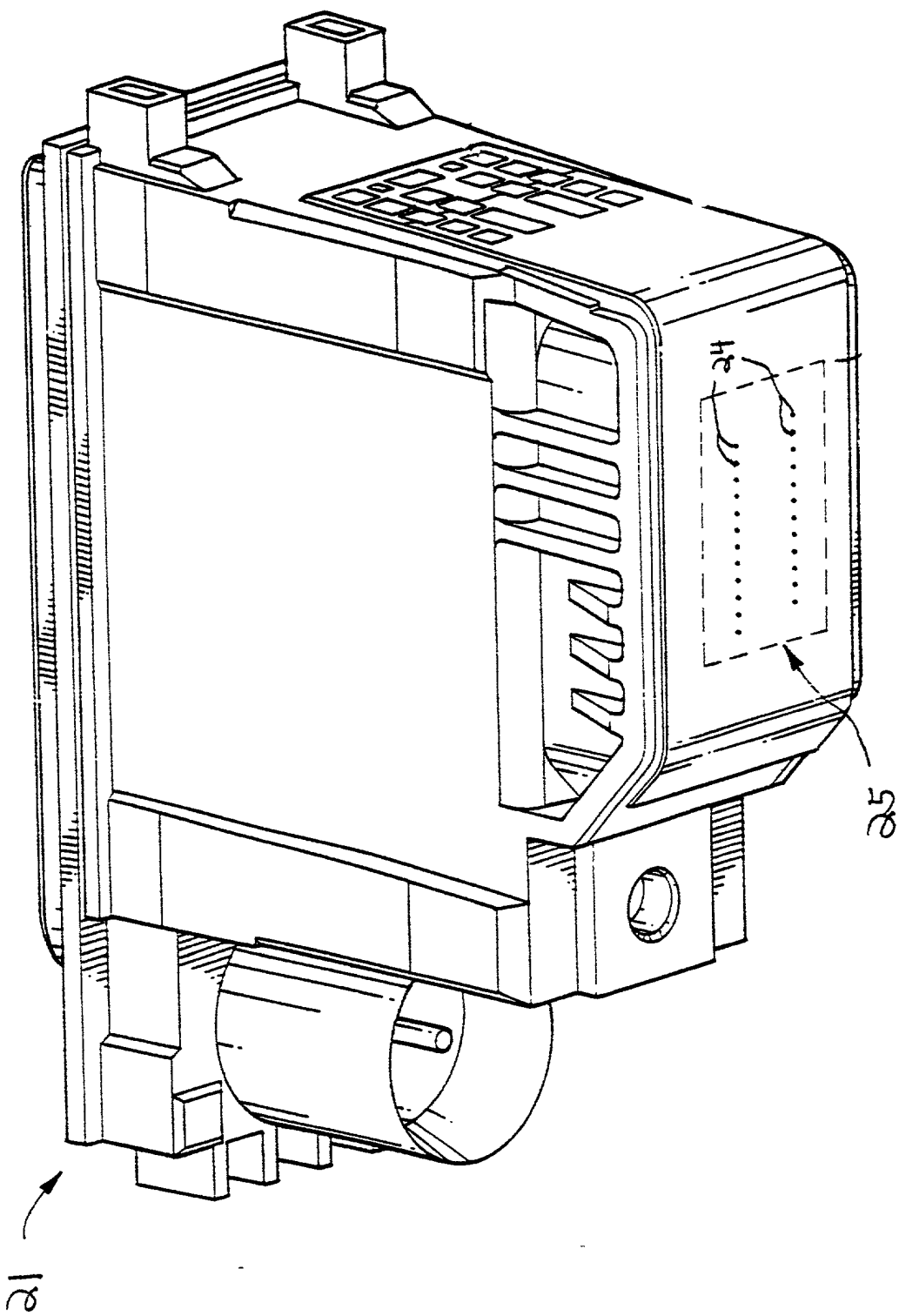


FIG. 1B

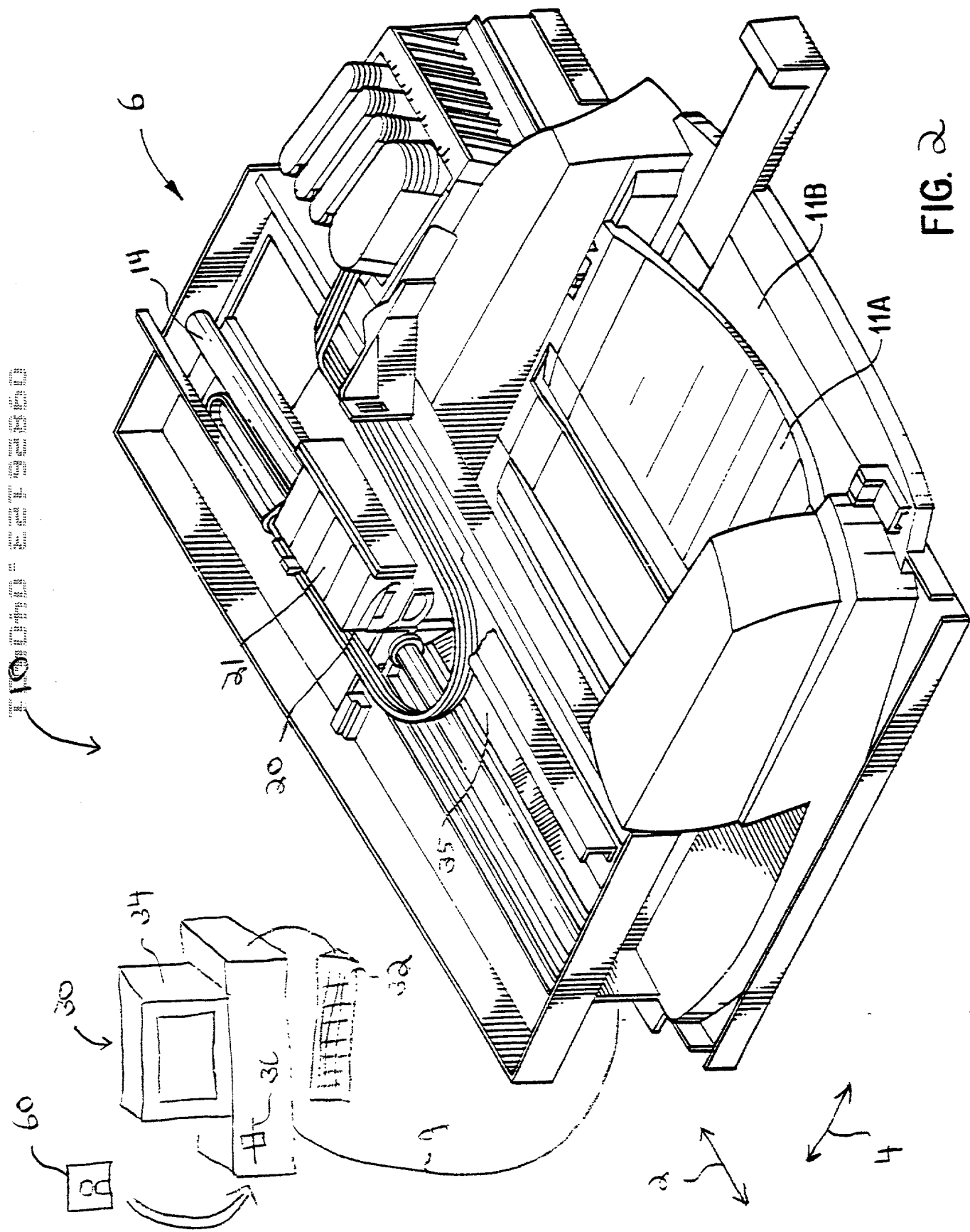


FIG. 2

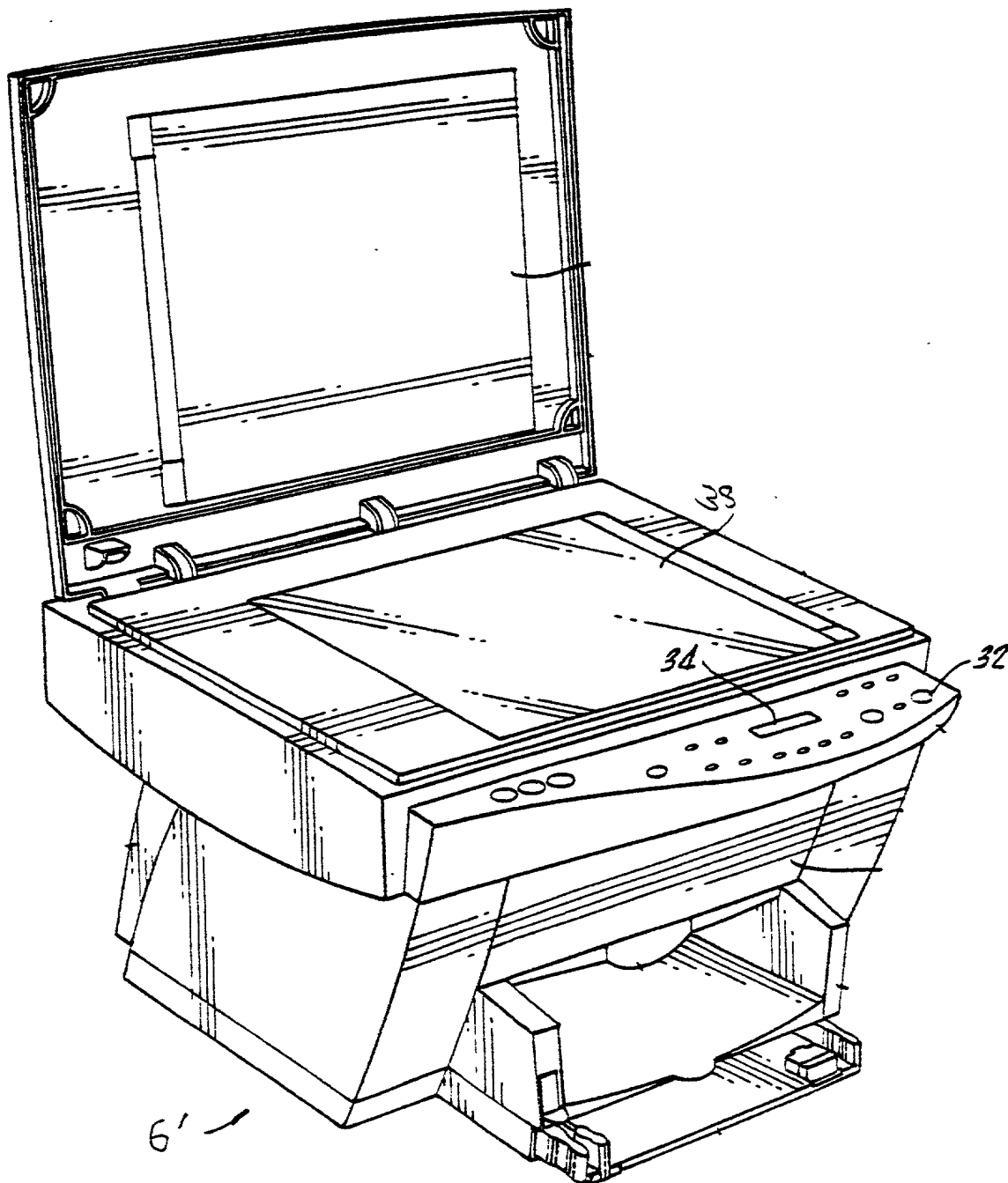


FIG. 3

K Pixel ImageData

K Printing Elements

UOP Map

Printed Image

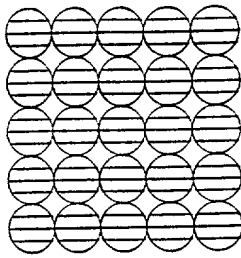
70a

72a

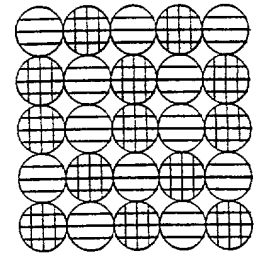
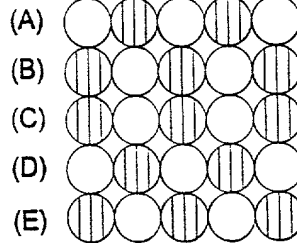
51a

76a

FIG.
4A



24



Uniform Density
52% UO printing

No white space

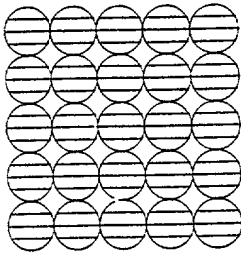
70b

72b

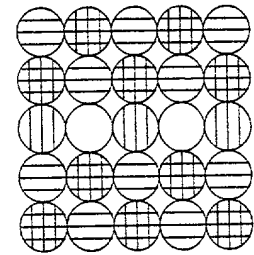
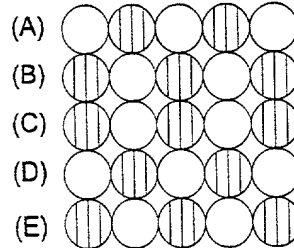
51b

76b

FIG.
4B



73



Uniform Density
52% UO printing

Visible white space

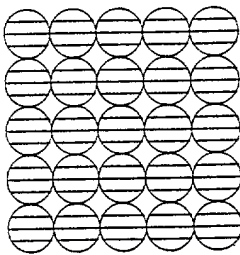
70c

72c

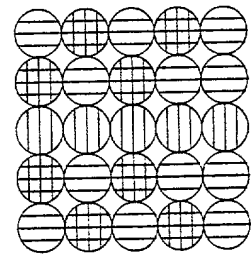
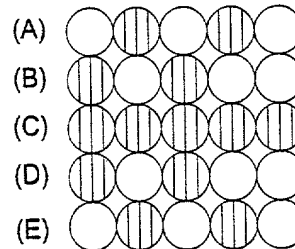
51c

76c

FIG.
4C



73



Variable Density
52% UO printing

No white space,
same saturation

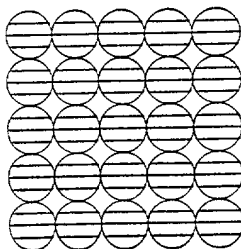
70d

72d

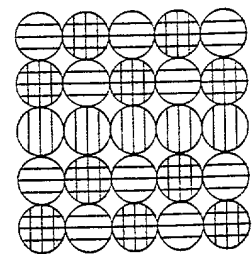
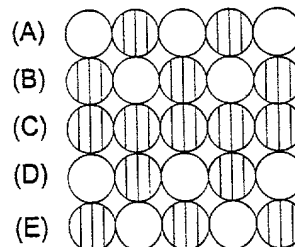
51d

76d

FIG.
4D



73



Variable Density
60% UO printing

No white space,
higher saturation

START

Provide a swath printer with a first printhead for depositing a colored (typically black) ink, and at least one additional printhead for depositing another fluid (typically cyan ink, magenta ink, yellow ink, or a conditioning solution)

Identify defective printing elements & functional printing elements of the first printhead

Determine which pixel rows in a swath will be printed by the defective elements and the functional elements of the first printhead

Establish under/overprinting maps for the additional printheads which enable the printing of a certain total percentage of pixels, allocated among pixel rows such that:
(a) a relatively higher percentage of pixels are enabled in pixel rows corresponding to the defective printing elements of the first printhead, and
(b) a relatively lower percentage of pixels are enabled in pixel rows corresponding to the functional printing elements of the first printhead

Provide a swath of image data (rows and columns of image pixels) containing at least one region (typically interior areas of text characters) to be underprinted and/or overprinted

Underprint ?

Print the regions with an additional printhead according to its under/overprinting map, such that a higher percentage of pixels in pixel rows corresponding to the defective printing elements are printed relative to the percentage of pixels printed in pixel rows corresponding to the functional printing elements

Print the regions with the first printhead

Overprint ?

Print the regions with another additional printhead according to its under/overprinting map, such that a higher percentage of pixels in pixel rows corresponding to the defective printing elements are printed relative to the percentage of pixels printed in pixel rows corresponding to the functional printing elements

END

FIG. 3A

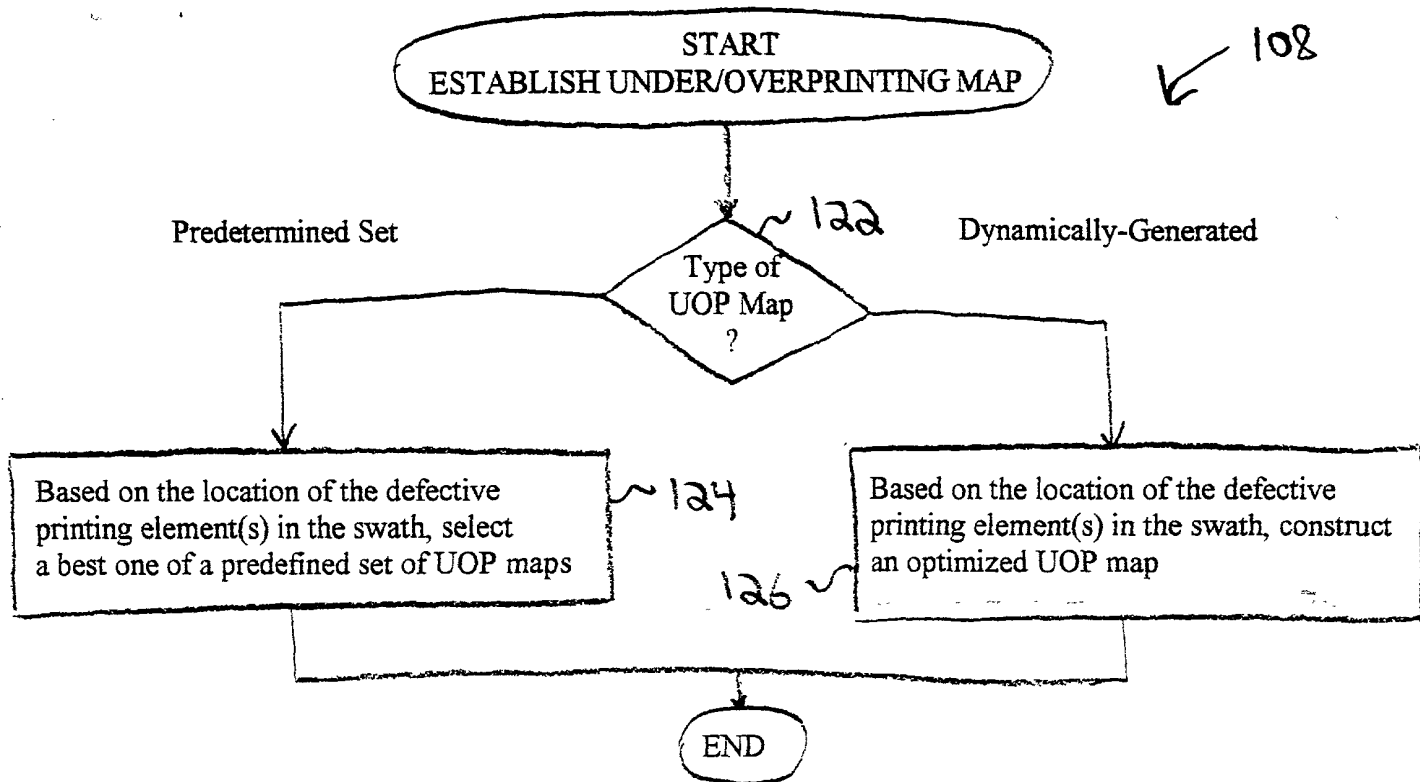


FIG. 5B

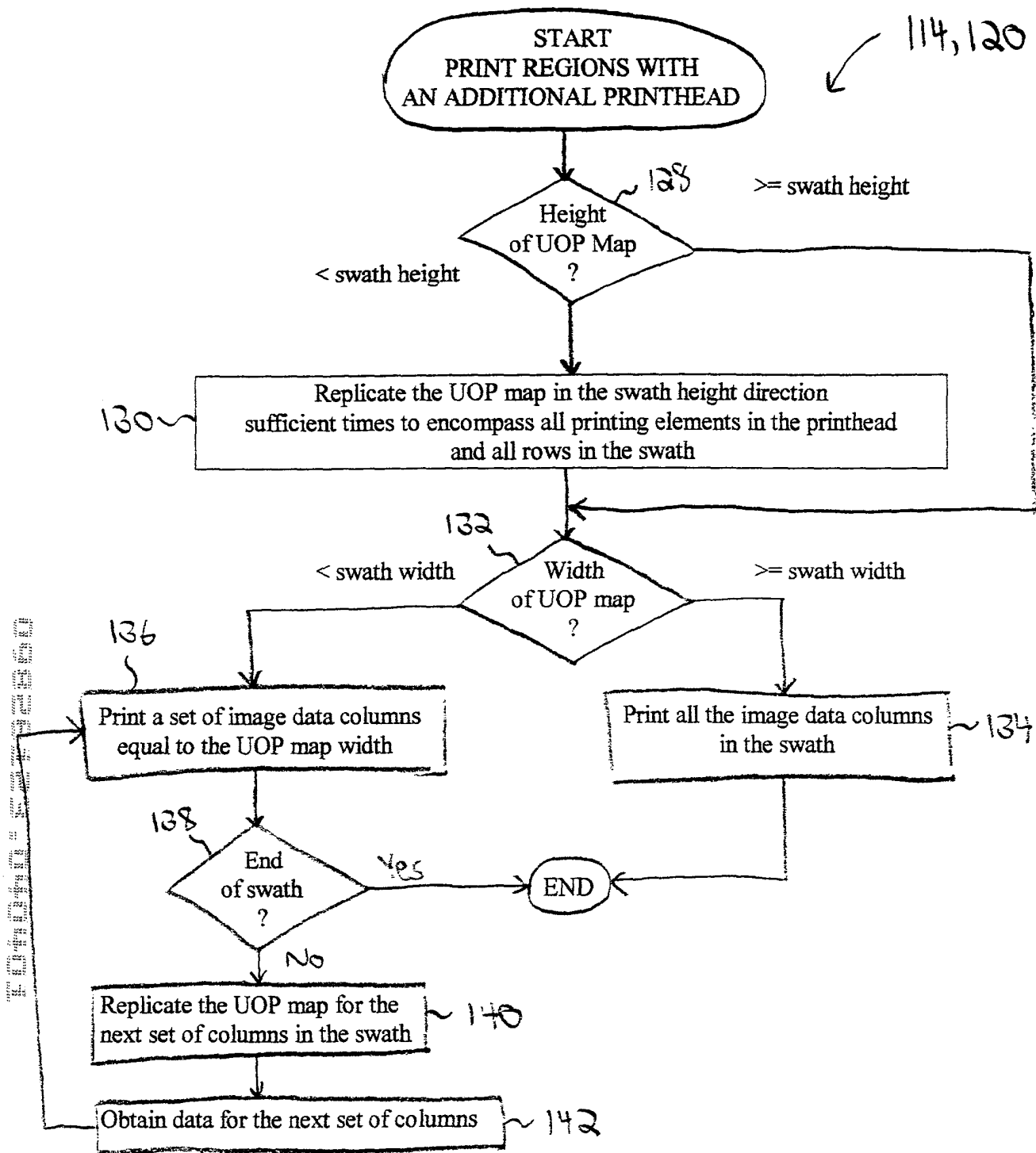


FIG. 5C

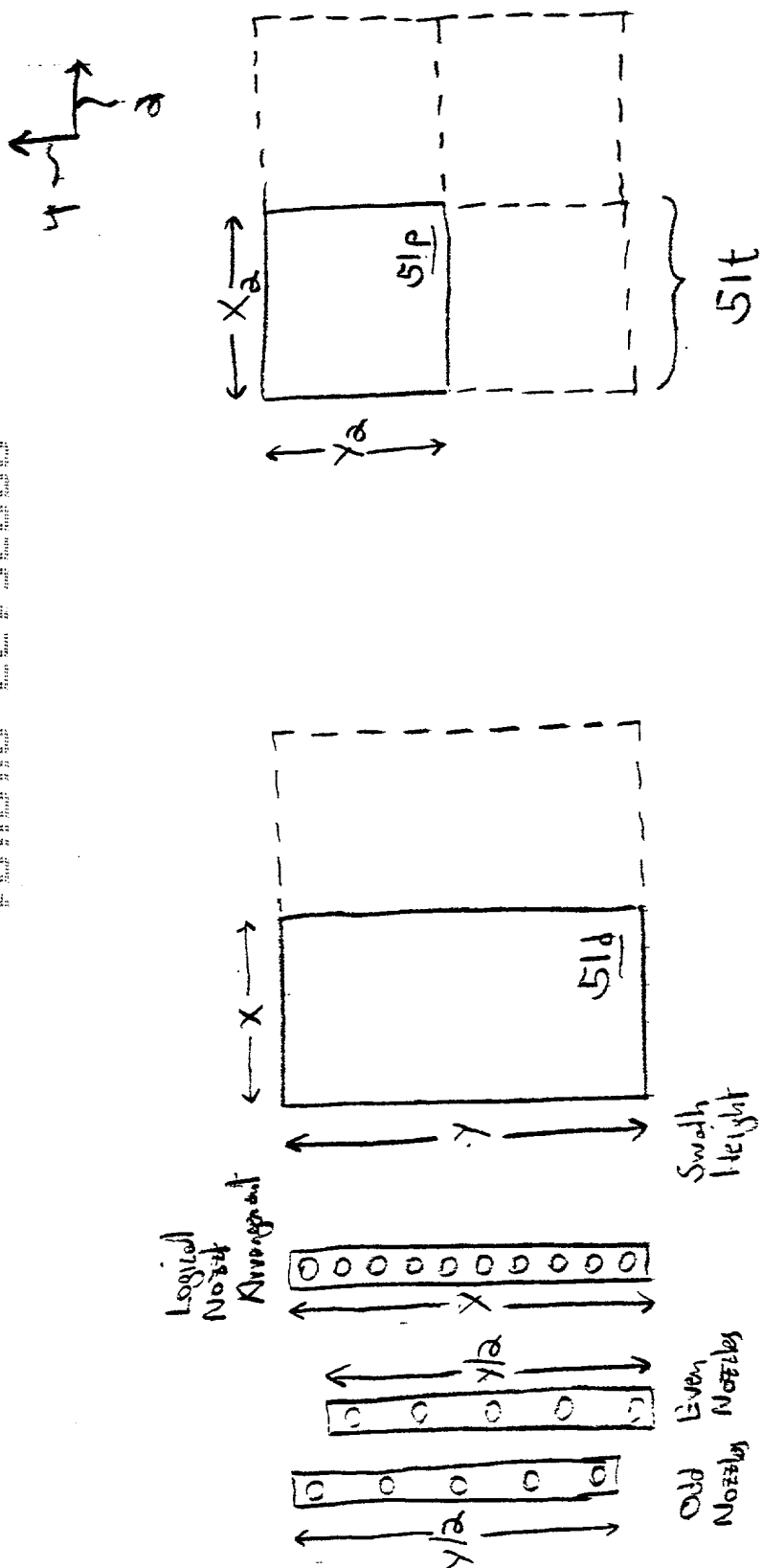


Fig. 6